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Thank you for the material on research and development financing, prepared by the U.S. side in accordance with the agreement reached at the November 1973 meeting of the USSR-U.S. Joint Group of Experts on Science Policy. In my opinion, this material is of considerable interest for accomplishing the tasks before us in our joint research. The Soviet side, on its part, deems it necessary to submit a number of proposals, which, it believes, will facilitate more efficient research on the topic "Financing Research and Development in the USSR and U.S. (Comparative Analysis)."

The Soviet side believes that an exchange of statistical data in the form proposed by the U.S. side, will hardly contribute to carrying out the tasks of our research. At the first stage of research, the sides will be able to provide to each other only such statistical data as have already been published and are thus known to the experts participating in the research. In any event, the data on research and development financing in the U.S., which the U.S. side has kindly offered to send us, is contained in the Soviet publication by V.I. Gromek, V.I. Maslennikov et al., SShA: nauka i obrazovaniye [Science and Education], Moscow; Nauka Publishing House,

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1974; in the U.S. research report Science Indicators 1972, Report of the National Science Board, 1973; and in certain other works at our disposal. With regard to published data on financing of science in the USSR, a sufficiently complete (though from the point of view of methodology not quite perfect) summary of this data is presented in Sources of Financing Stages of the Research, Development and Innovation Cycle in the USSR by Lou van E. Nolting, U.S. Department of Commerce, Foreign Economic Reports, No. 3, 1973.

But even the most detailed statistical data does not give any idea how it was obtained, what is included therein and to what extent, what the significance of such indexes is in each country, etc. Yet, without information of this nature it is impossible to even begin the work of comparing indexes of science financing in the USSR and the U.S. This is precisely how the Soviet side understands the provision of the "Program of Scientific and Technical Cooperation between the USSR and U.S. in the Field of Science Policy" which states that at the first stage exchange of material on our research topic will be aimed at examining concepts and differences in definitions, methods, practice, policy, and financial measures for supporting research and development (I, line 3).

The Soviet side regards resolution of these questions to be a priority task of our joint research, since herein lie the basic differences between the USSR and the U.S. in the field of financing scientific research projects. These differences are apparent even in the term used to describe the object being financed: in the USSR it is "Science," in the U.S. it is "Research and Development." There are many differences between these con-

cepts. For example, we will note that a substantial portion of development in the Soviet Union falls under "Science" only if it is being carried out by "independent design and planning organizations" (2, pp. 768-90). On the other hand, development which is carried out not by independent organizations but by design and planning subunits (divisions, bureaus) at industrial enterprises and in other organizations, are not financed in the capacity of science. If an organization has a planning and design as well as a scientific-research unit, financing of science "includes the amount of expenditures which pertains only to scientific-research activity carried out by such a scientific body" (2, p. 28).

There are also other differences in determining the scientific-research project being financed out of expenditures for science (in the USSR) and outlays for research and development (in the U.S.). In the Soviet Union, for example, the index of expenditures for science does not include research expenditures carried out directly at production enterprises (e.g. in plant laboratories). Total expenditures for science also do not include outlays for scientific-research being carried out by academic departments of institutions of higher learning. Differences of this nature, the Soviet side believes, must be determined and precisely established at the first stage of research, in order to work out, at subsequent stages, ways and methods which would make it possible to eliminate, to a greater or lesser extent, the effect of these differences upon comparability of science (research and development) financing indexes, used in our countries.

In order to eliminate to a certain extent the effect of differences, existing in the methodology and practice of financing science and research

and development in the USSR and U.S., it is necessary to define, with adequate precision, the scope of this financing in our countries. In the Soviet Union, for example, science financing includes expenditures incurred by scientific-research organizations prior to the stage of pilot model production which are subject to check-out and testing under production conditions. As of this stage, expenditures incurred by the aforementioned bodies are not included within the overall total of science expenditures (2, p. 28). In the U.S., there probably also exists a financing stage, similar in concept. Establishment of the positions of these stages along the "Science-Production" economic contact line in the USSR and U.S. will help to define the scope of science (research and development) financing and, consequently, will facilitate more accurate comparison of total expenditures for these purposes in our countries.

In the view of the Soviet side, serious difficulties will arise in comparing expenditures for science (research and development) in the USSR and the U.S. in terms of their intended use. In the U.S., the fundamental classification of scientific-research activity is the distinction between basic research, applied research, and development. However, as has been repeatedly pointed out in the literature, this classification is not based on absolutely precise criteria, and thus, in the course of financing research and development, subjective interpretations arise which lead to the adoption of arbitrary decisions during allocation of funds for intended uses and research stages. In the USSR, such a classification is not used in science financing (a distinction between basic and applied research has another purpose here).

In the Soviet Union, expenditures for science are made under a different classification of directions in scientific research activity. Also, there is a distinct relationship between research directions and their financing:

- scientific research activity, related to carrying out government assignments, to the solution of basic scientific and technical problems in the field of natural and social sciences, and scientific-research activity of a basic (theoretical) and exploratory nature are financed through appropriations from the state budget;

- scientific-research projects of an all-state or [industrial] branch nature are financed out of funds for scientific research, provided for in the cost plans for industrial output, construction and installation work, and transportation, in plans for operating costs, as well as in plans for turnover allowances of trade, supply, sales and procurement organizations, and also in construction estimates (in those instances when scientific-research work is envisaged during a construction project);

- scientific-research activity in the sphere of construction, in the building materials industry, in the building industry, and in the road-building machine industry of an all-state nature are financed by funds from the state budget, specifically appropriated for these purposes in the established manner;

- agricultural scientific-research activity of an all-state and branch nature is financed out of the state budget and out of funds obtained through the sale of goods produced on experimental farms and at enterprises of agricultural scientific-research establishments;

-- scientific-research activities, carried out by scientific-research establishments of the USSR Ministry of Geology, and geology ministries and administrations of union republics are financed out of appropriations from the state budget covering operating costs for geological exploration and topographic and geodesic activity (2, pp. 28-29).

During the comparison, some further difficulties will arise because this general approach has recently been undergoing certain changes and modifications, related to the reorganization of production management in the USSR. Thus, financing of scientific-research projects in ministries which have changed over to the new management system is accomplished from a single fund for development of science and technology which is maintained through deductions from planned profits. In all-union and republic industrial associations, financing of scientific-research activities is accomplished through the scientific research fund, set up in the associations in accordance with the Regulations on Establishment and Utilization of this fund (2, p. 29).

Taking into account all these differences in the methodology of science (research and development) financing in the USSR and the U.S., the Soviet side believes that one of the most important practical results of our joint research must be recomputation of outlays for research and development in the U.S. on the basis of methodological and methodical principles accepted in the USSR (this recomputation is performed by U.S. experts), and recomputation of expenditures for science in the Soviet Union on the basis of methodological and methodical principles, adopted in the U.S. (this recomputation is performed by Soviet experts).

Let us clarify how such recomputations can be accomplished. For example, to determine the comparable volume of expenditures for basic research in the USSR, it is necessary to have data concerning the unit weight of such research within research and development expenditures in individual fields of science and branches of the U.S. national economy. Upon receiving the aforementioned data from the U.S. side, Soviet experts will compare it with unpublished Soviet statistical material and on this basis will compute the comparable magnitude of this index for the Soviet Union.

Other approaches to such recomputations, to be worked out and developed in detail in the course of our joint research are also possible. In the opinion of the Soviet side, materials to be exchanged by the sides, and joint consultations should make it possible to attain maximum accuracy in the results of these recomputations. If the U.S. side accepts the proposal for mutual recomputation as a method of comparative analysis, one should also establish a series of indexes to be analyzed by this method and set a deadline for computation of each index.

At the same time, the Soviet side believes that our joint research should not be limited to solving problems related to the comparability of individual statistical indexes of scientific-research financing in the USSR and the U.S. In our view, analysis of the economic mechanisms used in our countries for the actual financing of science (research and development) could be an important part of this research. It seems to us that this analysis must not only show the existing procedure of allocating and expending funds for carrying out research, for applying its results in various areas of practical activity, and for creating conditions necessary for recruiting scientists to the solution of the most urgent and important

problems, etc., but must also describe the historical development of this procedure, the basic stages of its development, as well as show the most significant changes which, the experts believe, will occur in the future in the area of financing scientific activity in the USSR and the U.S.

In the view of the Soviet side, a separate effort of our joint research must be to overcome the difficulties, resulting from the fundamental differences of a number of social principles which underlie the economic mechanisms for financing scientific research activity in the USSR and the U.S. In the Soviet Union, for example, outlays for science do not involve any sort of payments for land, since the latter is public property (3); in the USSR, as a rule, depreciation is not computed for equipment used for scientific research, since science is considered a non-productive branch of the national economy (2, p. 703), etc. In the U.S., such questions are decided in the opposite fashion. Therefore, it appears important to determine these differences which manifest themselves in the operation of economic mechanisms of financing science (research and development) and to work out methodological approaches which would permit a quantitative evaluation of the differences, resulting from such distinctions. Perhaps this evaluation should be worked out in the form of special currency exchange rates for scientific research -- a research rate of the dollar with respect to the ruble (or of the ruble to the dollar).

The Soviet side thinks it most desirable that materials to be exchanged by our sides in the process of joint research cite the sources of concepts or data used in this material (the information concerning U.S. methodology of collecting data, definitions and concepts, attached to your letter of April 24, 1974 did not cite such references). It is important that in studying

the received material it be clear whether the statements and data contained therein represent the official position of governmental bodies, whether they represent the views of some organization (scientific, economic, etc.), or whether they reflect the point of view of an individual specialist. Specifically, the following sources were utilized in the present letter:

1. Program of Scientific and Technical Cooperation Between the USSR and the U.S. in the Field of Science Policy (Attachment 3 to the Record of Discussions of the Joint Group of Experts in the Field of Science Policy, Washington, November 19-23, 1974).

2. Metodicheskiye ukazaniya k razrabotke gosudarstvennykh planov razvitiya narodnogo khozyaystva SSSR [Methodology Guidance for Working out State Plans for Development of the National Economy of the USSR], Moscow, Ekonomika Publishing House, 1974.

3. Constitution of the USSR (Basic Law).

I will be most thankful to you if you could communicate your remarks and proposals on the questions, set forth in this letter, prior to our meeting.

Respectfully yours,

[Signed]

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and Capital Investment of the State
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